Listing of Claims

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (currently amended) A digital imaging device comprising:

a top electrode layer;

a dielectric layer under the top electrode layer;

a sensor layer under the dielectric layer, comprising a photoconductive layer and a plurality of pixels, each pixel comprising a charge-collecting electrode;

a thin film transistor readout matrix connected to the charge-collecting electrodes; and

a variable power supply set ~~adapted~~ to provide ~~a range of~~ voltages between the top electrode layer and the readout matrix of 3.0 kV to 1.5 kV, said voltages [[;
said range of voltages]] establishing electrical fields in said sensor layer ~~ranging from~~ between a minimum electrical field E_C, at which a signal-to-noise ratio of the device is relatively high but the device operates below a saturation point, ~~to~~ and a higher electrical field E, at which the signal-to-noise ratio may be lower but is at least 50; and

said variable power supply being set to a selected voltage ~~within said range~~ between 3.0 kV and 1.5 kV matching a selected object being imaged with said digital imaging device.

2. (original) The digital x-ray imaging device of claim 1 wherein the variable power supply comprises a programmable power supply.

3. (original) The digital x-ray imaging device of claim 1 wherein the photoconductive layer comprises an element selected from the group consisting of: selenium, lead iodide, thallium bromide, indium iodide, and cadmium telluride.

4. (original) The digital x-ray imaging device of claim 3 wherein the photoconductive layer is about 100 to about 1000 microns thick.

5. (original) The digital x-ray imaging device of claim 4 wherein the photoconductive layer comprises a layer of selenium about 500 microns thick.

Claims 6-8 (canceled).

9. (currently amended) A method for providing a broad dynamic range for a digital imaging device and controlling a signal-to-noise behavior of the device to maintain a signal-to-noise ratio of at least ~~a selected level~~ 50 and prevent saturation of the device, said device comprising a top electrode layer; a dielectric layer; a sensor layer comprising a photoconductive layer and a plurality of pixels, each pixel comprising a charge-collecting electrode; a thin film transistor readout matrix connected to the charge-collecting electrodes; and a power supply for supplying a voltage between the top electrode layer and the readout matrix; the method comprising varying the voltage between the top electrode and the readout matrix between 3.0 kV and 1.5 kV to provide ~~an acceptable~~ signal-to-noise ratio of at least 50 over

a ~~greater~~ range of exposures ~~than provided with a single voltage~~; said step of varying said voltage comprising varying the voltage to ~~establishing~~ establish electrical fields in said sensor between ~~ranging from~~ a minimum electrical field E_c, at which the device has a relatively high signal-to-noise ratio but still remains below a saturation point, ~~to~~ and a higher electrical field E, at which the device has a signal-to-noise ratio that may be lower but still is at least 50, and said varying further comprising ultimately setting said voltage at a level within said range matching an object being examined with said device.

10. (original) The method of claim 9 further comprising using the method for non-destructive testing of one or more objects.

11. (original) The method of claim 10 further comprising performing the non-destructive testing on an object selected from the group consisting of: a printed circuit board, a wax casting, a metal casting, a turbine blade, and a rocket cone.

12. (original) The method of claim 9 comprising varying the voltage in a range between about 1.5 kV and about 3.0 kV.

13. (original) The method of claim 9 comprising using the digital imaging x-ray device with a range of x-ray energies from about 10 KeV to about 10 MeV.

Claim 14 (canceled).

15. (currently amended) A method of operating a digital imaging device to image an object in a non-destructive testing process, said digital imaging device comprising a top electrode layer, a sensor layer comprising a photoconductive layer and a plurality of pixels, each pixel comprising a charge-collecting electrode, a thin film transistor readout matrix connected to the charge-collecting electrodes, and a power supply for supplying a voltage between the top electrode layer and the readout matrix; the method comprising the steps of selectively varying the voltage between the top electrode and the readout matrix to provide a signal-to-noise ratio of at least 50 over a range of exposures and to select a voltage within said range that establishes an ~~electric~~ electrical field in said sensor layer of at least a minimum value E_c and causes the digital imaging device to operate below a digital electronic saturation point, said selected voltage corresponding to a selected signal-to-noise behavior in which the signal-to-noise ratio is at least 50 and matches a selected object being imaged with said device in said non-destructive testing process.

16. (previously presented) A method as in claim 15 in which said voltage is in the range of 1.5 kV and 3.0 kV.

17. (previously presented) A method as in claim 16 in which the signal-to-noise ratio increases from below 200 to above 300 before said saturation point is reached as said voltage changes from 3.0 kV to 1.5 kV.

18. (previously presented) A method as in claim 15 in which said selected voltage causes said minimum electrical field to

corresponds to a signal-to-noise ratio in excess of 300.

19. (previously presented) A method as in claim 15 in which said selected signal-to-noise behavior is maintained at exposures in the range of 10KeV to 10 MeV.

20. (previously presented) A method as in claim 15 including the step of presetting a number of selected voltages for use with respective types of specimen.